



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**APPLICANT:** Wilfred H. Nelson et al.      **GROUP:** 1641  
**SERIAL NO:** 08/818,534      **EXAMINER:** J. Hines  
**FILED:** 03/14/97  
**FOR:** **DIRECT DETECTION OF BACTERIA-ANTIBODY  
COMPLEXES VIA UV RESONANCE RAMAN  
SPECTROSCOPY**

**Assistant Commissioner of Patents  
Washington, D.C. 20231**

Sir:

**DECLARATION**

Now comes Chris Brown who declares as follows:

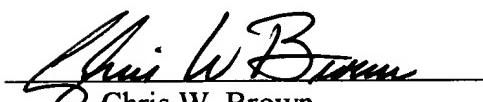
- 1) That I am a professor of Chemistry at the University of Rhode Island, Kingston, Rhode Island;;
- 2) That I have been engaged in research since about 1962;
- 3) That attached hereto is my *curriculum vitae*;
- 4) That I have published many research papers and have performed extensive research in the field of chemical and biological spectroscopy with emphasis on UV-Visible, Near-Infrared, Mid-Infrared Absorption and Raman Spectroscopies.
- 5) That I have read the above-referenced application, including the amended claims that were filed in the United States Patent and Trademark Office on November 16, 2000 (C of M), the Office Action dated August 16, 2000, United States Patent

Number 4,847,198 issued to Nelson et al. (Nelson et al.) and United States Patent Number 5,512,492 issued to Herron et al. (Herron et al.);

- 6) That it was known to those of skill in the art that aromatic amino acids produce resonance Raman spectra when irradiated with light having a wavelength in the range of about 242-257 nm as evidenced by the statements set forth on page 2 of the proposed publication entitled "Raman Spectral Intensities of Nucleic Acid at 251-nm-Excitation from *E.Coli* and *E.Coli*-antibody complexes", authored by Wu et al., attached herewith, hereinafter Exhibit A, at the time Applicant's invention was made;
- 7) That because antibodies are comprised of aromatic amino acids, one of skill in the art, when practicing the claimed method as set forth in claim 9 or using the claimed system as set forth in claim 12, would have expected that the irradiation of antibodies and/or antibody-antigen complexes with light having a wavelength in the range of about 242-257 nm would have produced resonance Raman spectra that would have interfered with the resonance Raman spectra of microorganisms in the sample at the time Applicant's claimed invention was made;
- 8) That, contrary to stated expectation set forth in paragraph 7, the irradiation of the antibody and/or antibody-antigen complexes did not produce resonance Raman spectra that interfered with the Raman spectra of the microorganisms as evidenced by the above-referenced application on page 5 and the spectral results set forth in Fig. 3 of Exhibit A.

- 9) That, in view of the statements set forth in paragraphs 7 and 8, the practice of the claimed method as set forth in claim 9 and/or the use of the claimed system as set forth in claim 12 yields unexpectedly significant results;
- 10) That the unexpectedly significant results referred to in enumerated paragraph 9 demonstrate that a microorganism can be detected in a sample wherein the ratio of antibody to microorganisms in the sample is  $10^6/1$  as evidenced by the spectral results set forth in Exhibit A on pg. 14.

By:

  
Chris W. Brown

Date: 4/30/01

Title: Professor of Chemistry  
University of Rhode Island